SEQUENCE LISTING

<400> 1
```
cggacgcgtg ggcggacgcg tgggtcgccc acgcgtccga cttgttgcag ttgctgtagg 60
attctaaatc caggtgattg tttcaaactg agcatcaaca acaaaaacat ttgtatgata 120
tctatatttc aatcatggac caaaatcaac atttgaataa aacagcagag gcacaacctt 180
cagagaataa gaaaacaaga tactgcaatg gattgaagat gttcttggca gctctgtcac 240
tcagctttat tgctaagaca ctaggtgcaa ttattatgaa aagttccatc attcatatag 300
aacggagatt tgagatatcc tcttctcttg ttggtttttat tgacggaagc tttgaaattg 360
gaaatttgct tgtgattgta tttgtgagtt actttggatc caaactacat agaccaaagt 420
taattggaat cggttgtttc attatgggaa ttggaggtgt tttgactgct ttgccacatt 480
tcttcatggg atattacagg tattctaaag aaactaatat cgattcatca gaaaattcaa 540
catcgacctt atccacttgt ttaattaatc aaattttatc actcaataga gcatcacctg 600
agatagtggg aaaaggttgt ttaaaggaat ctgggtcata catgtggata tatgtgttca 660
tgggtaatat gcttcgtgga ataggggaga ctcccatagt accattgggg ctttcttaca 720
ttgatgattt cgctaagaa ggacattctt ctttgtattt aggtatattg aatgcaatag 780
caatgattgg tccaatcatt ggctttaccc tgggatctct gttttctaaa atgtacgtgg 840
atattggata tgtagatcta agcactatca ggataactcc tactgattct cgatgggttg 900
gagcttggtg gcttaatttc cttgtgtctg gactattctc cattatttct tccataccat 960
tctttttctt gccccaaact ccaaataaac cacaaaaaga aagaaaagct tcactgtctt 1020
tgcatgtgct ggaaacaaat gatgaaaagg atcaaacagc taatttgacc aatcaaggaa 1080
aaaatattac caaaaatgtg actggttttt tccagtcttt taaaagcatc cttactaatc 1140
ccctgtatgt tatgtttgtg cttttgacgt tgttacaagt aagcagctat attggtgctt 1200
ttacttatgt cttcaaatac gtagagcaac agtatggtca gccttcatct aaggctaaca 1260
tcttattggg agtcataacc atacctattt ttgcaagtgg aatgttttta ggaggatata 1320
```

```
tcattaaaaa attcaaactg aacaccgttg gaattgccaa attctcatgt tttactgctg 1380
tgatgtcatt gtccttttac ctattatatt ttttcatact ctgtgaaaac aaatcagttg 1440
ccggactaac catgacctat gatggaaata atccagtgac atctcataga gatgtaccac 1500
tttcttattg caactcagac tgcaattgtg atgaaagtca atgggaacca gtctgtggaa 1560
acaatggaat aacttacatc tcaccctgtc tagcaggttg caaatcttca agtggcaata 1620
aaaagcctat agtgttttac aactgcagtt gtttggaagt aactggtctc cagaacagaa 1680
attactcagc ccatttgggt gaatgcccaa gagatgatgc ttgtacaagg aaattttact 1740
tttttgttgc aatacaagtc ttgaatttat ttttctctgc acttggaggc acctcacatg 1800
tcatgctgat tgttaaaatt gttcaacctg aattgaaatc acttgcactg ggtttccact 1860
caatggttat acgagcacta ggaggaattc tagctccaat atattttggg gctctgattg 1920
atacaacgtg tataaagtgg tccaccaaca actgtggcac acgtgggtca tgtaggacat 1980
ataattccac atcattttca agggtctact tgggcttgtc ttcaatgtta agagtctcat 2040
cacttgtttt atatattata ttaatttatg ccatgaagaa aaaatatcaa gagaaagata 2100
tcaatgcatc agaaaatgga agtgtcatgg atgaagcaaa cttagaatcc ttaaataaaa 2160
ataaacattt tgtcccttct gctggggcag atagtgaaac acattgttaa ggggagaaaa 2220
aaagccactt ctgcttctgt gtttccaaac agcattgcat tgattcagta agatgttatt 2280
tttgaggagt tcctggtcct ttcactaaga atttccacat cttttatggt ggaagtataa 2340
ataagcctat gaacttataa taaaacaaac tgtaggtaga aaaaatgaga gtactcattg 2400
ttacattata gctacatatt tgtggttaag gttagactat atgatccata caaattaaag 2460
tgagagacat ggttactgtg taataaaaga aaaaatactt gttcaggtaa ttctaattct 2520
taataaaaca aatgagtatc atacaggtag aggttaaaaa ggaggagcta gattcatatc 2580
ctaagtaaag agaaatgcct agtgtctatt ttattaaaca aacaaacaca gagtttgaac 2640
tataatacta aggcctgaag tctagcttgg atatatgcta caataatatc tgttactcac 2700
ataaaattat atatttcaca gactttatca atgtataatt aacaattatc ttgtttaagt 2760
aaatttagaa tacatttaag tattgtggaa gaaataaaga cattccaata tttgcaaaaa 2820
aaaaaaaaaa                                                         2830


<210> 2
<211> 691
<212> PRT
<213> Homo sapiens

<400> 2
Met Asp Gln Asn Gln His Leu Asn Lys Thr Ala Glu Ala Gln Pro Ser
1               5                   10                  15

Glu Asn Lys Lys Thr Arg Tyr Cys Asn Gly Leu Lys Met Phe Leu Ala
            20                  25                  30

Ala Leu Ser Leu Ser Phe Ile Ala Lys Thr Leu Gly Ala Ile Ile Met
            35                  40                  45

Lys Ser Ser Ile Ile His Ile Glu Arg Arg Phe Glu Ile Ser Ser Ser
        50                  55                  60

Leu Val Gly Phe Ile Asp Gly Ser Phe Glu Ile Gly Asn Leu Leu Val
65                  70                  75                  80

Ile Val Phe Val Ser Tyr Phe Gly Ser Lys Leu His Arg Pro Lys Leu
                85                  90                  95

Ile Gly Ile Gly Cys Phe Ile Met Gly Ile Gly Gly Val Leu Thr Ala
            100                 105                 110

Leu Pro His Phe Phe Met Gly Tyr Tyr Arg Tyr Ser Lys Glu Thr Asn
        115                 120                 125
```

2

```
Ile Asp Ser Ser Glu Asn Ser Thr Ser Thr Leu Ser Thr Cys Leu Ile
    130               135               140

Asn Gln Ile Leu Ser Leu Asn Arg Ala Ser Pro Glu Ile Val Gly Lys
145               150               155               160

Gly Cys Leu Lys Glu Ser Gly Ser Tyr Met Trp Ile Tyr Val Phe Met
            165               170               175

Gly Asn Met Leu Arg Gly Ile Gly Glu Thr Pro Ile Val Pro Leu Gly
            180               185               190

Leu Ser Tyr Ile Asp Asp Phe Ala Lys Glu Gly His Ser Ser Leu Tyr
        195               200               205

Leu Gly Ile Leu Asn Ala Ile Ala Met Ile Gly Pro Ile Ile Gly Phe
    210               215               220

Thr Leu Gly Ser Leu Phe Ser Lys Met Tyr Val Asp Ile Gly Tyr Val
225               230               235               240

Asp Leu Ser Thr Ile Arg Ile Thr Pro Thr Asp Ser Arg Trp Val Gly
            245               250               255

Ala Trp Trp Leu Asn Phe Leu Val Ser Gly Leu Phe Ser Ile Ile Ser
            260               265               270

Ser Ile Pro Phe Phe Phe Leu Pro Gln Thr Pro Asn Lys Pro Gln Lys
        275               280               285

Glu Arg Lys Ala Ser Leu Ser Leu His Val Leu Glu Thr Asn Asp Glu
    290               295               300

Lys Asp Gln Thr Ala Asn Leu Thr Asn Gln Gly Lys Asn Ile Thr Lys
305               310               315               320

Asn Val Thr Gly Phe Phe Gln Ser Phe Lys Ser Ile Leu Thr Asn Pro
            325               330               335

Leu Tyr Val Met Phe Val Leu Leu Thr Leu Leu Gln Val Ser Ser Tyr
            340               345               350

Ile Gly Ala Phe Thr Tyr Val Phe Lys Tyr Val Glu Gln Gln Tyr Gly
            355               360               365

Gln Pro Ser Ser Lys Ala Asn Ile Leu Leu Gly Val Ile Thr Ile Pro
    370               375               380

Ile Phe Ala Ser Gly Met Phe Leu Gly Gly Tyr Ile Ile Lys Lys Phe
385               390               395               400

Lys Leu Asn Thr Val Gly Ile Ala Lys Phe Ser Cys Phe Thr Ala Val
            405               410               415

Met Ser Leu Ser Phe Tyr Leu Leu Tyr Phe Phe Ile Leu Cys Glu Asn
            420               425               430
```

3

```
Lys Ser Val Ala Gly Leu Thr Met Thr Tyr Asp Gly Asn Asn Pro Val
    435             440             445

Thr Ser His Arg Asp Val Pro Leu Ser Tyr Cys Asn Ser Asp Cys Asn
    450             455             460

Cys Asp Glu Ser Gln Trp Glu Pro Val Cys Gly Asn Asn Gly Ile Thr
465             470             475             480

Tyr Ile Ser Pro Cys Leu Ala Gly Cys Lys Ser Ser Ser Gly Asn Lys
            485             490             495

Lys Pro Ile Val Phe Tyr Asn Cys Ser Cys Leu Glu Val Thr Gly Leu
            500             505             510

Gln Asn Arg Asn Tyr Ser Ala His Leu Gly Glu Cys Pro Arg Asp Asp
    515             520             525

Ala Cys Thr Arg Lys Phe Tyr Phe Phe Val Ala Ile Gln Val Leu Asn
    530             535             540

Leu Phe Phe Ser Ala Leu Gly Gly Thr Ser His Val Met Leu Ile Val
545             550             555             560

Lys Ile Val Gln Pro Glu Leu Lys Ser Leu Ala Leu Gly Phe His Ser
            565             570             575

Met Val Ile Arg Ala Leu Gly Gly Ile Leu Ala Pro Ile Tyr Phe Gly
            580             585             590

Ala Leu Ile Asp Thr Thr Cys Ile Lys Trp Ser Thr Asn Asn Cys Gly
    595             600             605

Thr Arg Gly Ser Cys Arg Thr Tyr Asn Ser Thr Ser Phe Ser Arg Val
    610             615             620

Tyr Leu Gly Leu Ser Ser Met Leu Arg Val Ser Ser Leu Val Leu Tyr
625             630             635             640

Ile Ile Leu Ile Tyr Ala Met Lys Lys Lys Tyr Gln Glu Lys Asp Ile
            645             650             655

Asn Ala Ser Glu Asn Gly Ser Val Met Asp Glu Ala Asn Leu Glu Ser
            660             665             670

Leu Asn Lys Asn Lys His Phe Val Pro Ser Ala Gly Ala Asp Ser Glu
            675             680             685

Thr His Cys
    690


<210> 3
<211> 2442
<212> DNA
<213> Homo sapiens
```

4

<400> 3

```
cccgggtcga cccacgcgtc cgggataaag tactcccagg aaggctttga gccttggcag 60
aagaggctgg gattgaagct tcaggagag ccagaggtga ggctggagtg ggagatcacc 120
tgaggcaggg ccagcgggtg aggtacccca ggtaccagac aaggaaacca aagccacaat 180
gggcacagaa aacacacctg gaggcaaagc cagcccagac cctcaggacg tgcggccaag 240
tgtgttccat aacatcaagc tgttcgttct gtgccacagc ctgctgcagc tggcgcagct 300
catgatctcc ggctacctaa agagctccat ctccacagtg gagaagcgct cggcctctc 360
cagccagacg tcggggctgc tggcctcctt caacgaggtg gggaacacag ccttgattgt 420
gtttgtgagc tattttggca gccgggtgca ccgaccccga atgattggct atggggctat 480
ccttgtggcc ctggcgggcc tgctcatgac tctcccgcac ttcatctcgg agccataccg 540
ctacgacaac accagccctg aggatatgcc acaggacttc aaggcttccc tgtgcctgcc 600
cacaacctcg gccccagcct cggccccctc caatggcaac tgctcaagct acacagaaac 660
ccagcatctg agtgtggtgg ggatcatgtt cgtggcacag accctgctgg gcgtgggcgg 720
ggtgcccatt cagccctttg gcatcctcta catcgttgac tttgcccaca acagtaactc 780
gccctctac ctcgggatcc tgtttgcagt gaccatgatg gggccaggcc tggcctttgg 840
gctgggcagc ctcatgctgc gcctttatgt ggacattaac cagatgccag aaggtggtat 900
cagcctgacc ataaaggacc cccgatgggt gggtgcctgg tggctggggtt cctcatcgc 960
tgccggtgca gtggccctgg ctgccatccc ctacttcttc ttccccaagg aaatgcccaa 1020
ggaaaaacgt gagcttcagt ttcggcgaaa ggtcttagca gtcacagact cacctgccag 1080
gaagggcaag gactctccct ctaagcagag ccctggggag tccacgaaga agcaggatgg 1140
cctagtccag attgcaccaa acctgactgt gatccagttc attaaagtct ccccagggt 1200
gctgctgcag accctacgcc accccatctt cctgctggtg gtcctgtccc aggtatgctt 1260
gtcatccatg ctgcgggca tggccacctt cctgcccaag ttcctggagc gccagttttc 1320
catcacagcc tcctacgcca acctgctcat cggctgcctc tccttccctt cggtcatcgt 1380
gggcatcgtg gtgggtggcg tcctggtcaa gcggctccac ctgggccctg tgggatgcgg 1440
tgccctttgc ctgctgggga tgctgctgtg cctcttcttc agcctgccgc tcttctttat 1500
cggctgctcc agccaccaga ttgcgggcat cacacaccag accagtgccc accctgggct 1560
ggagctgtct ccaagctgca tggaggcctg ctcctgccca ttggacggct ttaaccctgt 1620
ctgcgacccc agcactcgtg tggaatacat cacaccctgc cacgcaggct gctcaagctg 1680
ggtggtccag gatgctctgg acaacagcca ggttttctac accaactgca gctgcgtggt 1740
ggagggcaac cccgtgctgg caggatcctg cgactcaacg tgcagccatc tggtggtgcc 1800
cttcctgctc ctggtcagcc tgggctcggc cctggcctgt ctcacccaca caccctcctt 1860
catgctcatc ctaagaggag tgaagaaaga agacaagact ttggctgtgg gcatccagtt 1920
catgttcctg aggattttgg cctggatgcc cagccccgtg atccacggca cgccatcga 1980
caccacctgt gtgcactggg ccctgagctg tgggcgtcga gctgtctgtc gctactacaa 2040
taatgacctg ctccgaaacc ggttcatcgg cctccagttc ttcttcaaaa caggttctgt 2100
gatctgcttc gccttagttt tggctgtcct gaggcagcag acaaagagg caaggaccaa 2160
agagagcaga tccagccctg ccgtagagca gcaattgcta gtgtcggggc agggaagaa 2220
gccagaggat tcccgagtgt gagctgtctt ggggccccac ctggccaaga gtagcagcca 2280
cagcagtacc tcctctgagt cctttgccca agattgggtg tcaagagccc tgtgttccat 2340
tctggctcct ccactaaatt gctgtgtgac ttcaggcaaa aaaaaaaaaa aaaaaaaaa 2400
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 2442
```

<210> 4
<211> 687
<212> PRT
<213> Homo sapiens

<400> 4

```
Met Gly Thr Glu Asn Thr Pro Gly Gly Lys Ala Ser Pro Asp Pro Gln
1               5                   10                  15


Asp Val Arg Pro Ser Val Phe His Asn Ile Lys Leu Phe Val Leu Cys
                20                  25                  30


His Ser Leu Leu Gln Leu Ala Gln Leu Met Ile Ser Gly Tyr Leu Lys
            35                  40                  45
```

Ser Ser Ile Ser Thr Val Glu Lys Arg Phe Gly Leu Ser Ser Gln Thr
    50   55   60

Ser Gly Leu Leu Ala Ser Phe Asn Glu Val Gly Asn Thr Ala Leu Ile
65   70   75   80

Val Phe Val Ser Tyr Phe Gly Ser Arg Val His Arg Pro Arg Met Ile
                85   90   95

Gly Tyr Gly Ala Ile Leu Val Ala Leu Ala Gly Leu Leu Met Thr Leu
            100   105   110

Pro His Phe Ile Ser Glu Pro Tyr Arg Tyr Asp Asn Thr Ser Pro Glu
            115   120   125

Asp Met Pro Gln Asp Phe Lys Ala Ser Leu Cys Leu Pro Thr Thr Ser
    130   135   140

Ala Pro Ala Ser Ala Pro Ser Asn Gly Asn Cys Ser Ser Tyr Thr Glu
145   150   155   160

Thr Gln His Leu Ser Val Val Gly Ile Met Phe Val Ala Gln Thr Leu
            165   170   175

Leu Gly Val Gly Gly Val Pro Ile Gln Pro Phe Gly Ile Ser Tyr Ile
            180   185   190

Val Asp Phe Ala His Asn Ser Asn Ser Pro Leu Tyr Leu Gly Ile Leu
            195   200   205

Phe Ala Val Thr Met Met Gly Pro Gly Leu Ala Phe Gly Leu Gly Ser
    210   215   220

Leu Met Leu Arg Leu Tyr Val Asp Ile Asn Gln Met Pro Glu Gly Gly
225   230   235   240

Ile Ser Leu Thr Ile Lys Asp Pro Arg Trp Val Gly Ala Trp Trp Leu
            245   250   255

Gly Phe Leu Ile Ala Ala Gly Ala Val Ala Leu Ala Ala Ile Pro Tyr
            260   265   270

Phe Phe Phe Pro Lys Glu Met Pro Lys Glu Lys Arg Glu Leu Gln Phe
            275   280   285

Arg Arg Lys Val Leu Ala Val Thr Asp Ser Pro Ala Arg Lys Gly Lys
    290   295   300

Asp Ser Pro Ser Lys Gln Ser Pro Gly Glu Ser Thr Lys Lys Gln Asp
305   310   315   320

Gly Leu Val Gln Ile Ala Pro Asn Leu Thr Val Ile Gln Phe Ile Lys
            325   330   335

Val Phe Pro Arg Val Leu Leu Gln Thr Leu Arg His Pro Ile Phe Leu
            340   345   350

6

```
Leu Val Val Leu Ser Gln Val Cys Leu Ser Ser Met Ala Ala Gly Met
    355                 360             365

Ala Thr Phe Leu Pro Lys Phe Leu Glu Arg Gln Phe Ser Ile Thr Ala
    370                 375             380

Ser Tyr Ala Asn Leu Leu Ile Gly Cys Leu Ser Phe Pro Ser Val Ile
385                 390             395                 400

Val Gly Ile Val Val Gly Gly Val Leu Val Lys Arg Leu His Leu Gly
            405             410                 415

Pro Val Gly Cys Gly Ala Leu Cys Leu Leu Gly Met Leu Leu Cys Leu
            420             425                 430

Phe Phe Ser Leu Pro Leu Phe Phe Ile Gly Cys Ser Ser His Gln Ile
        435             440             445

Ala Gly Ile Thr His Gln Thr Ser Ala His Pro Gly Leu Glu Leu Ser
    450                 455             460

Pro Ser Cys Met Glu Ala Cys Ser Cys Pro Leu Asp Gly Phe Asn Pro
465                 470             475                 480

Val Cys Asp Pro Ser Thr Arg Val Glu Tyr Ile Thr Pro Cys His Ala
            485             490                 495

Gly Cys Ser Ser Trp Val Val Gln Asp Ala Leu Asp Asn Ser Gln Val
        500             505             510

Phe Tyr Thr Asn Cys Ser Cys Val Val Glu Gly Asn Pro Val Leu Ala
    515             520             525

Gly Ser Cys Asp Ser Thr Cys Ser His Leu Val Val Pro Phe Leu Leu
    530             535             540

Leu Val Ser Leu Gly Ser Ala Leu Ala Cys Leu Thr His Thr Pro Ser
545             550             555                 560

Phe Met Leu Ile Leu Arg Gly Val Lys Lys Glu Asp Lys Thr Leu Ala
            565             570                 575

Val Gly Ile Gln Phe Met Phe Leu Arg Ile Leu Ala Trp Met Pro Ser
        580             585             590

Pro Val Ile His Gly Ser Ala Ile Asp Thr Thr Cys Val His Trp Ala
    595             600             605

Leu Ser Cys Gly Arg Arg Ala Val Cys Arg Tyr Tyr Asn Asn Asp Leu
    610             615             620

Leu Arg Asn Arg Phe Ile Gly Leu Gln Phe Phe Phe Lys Thr Gly Ser
625             630             635                 640

Val Ile Cys Phe Ala Leu Val Leu Ala Val Leu Arg Gln Gln Asp Lys
            645             650                 655
```

7

Glu Ala Arg Thr Lys Glu Ser Arg Ser Ser Pro Ala Val Glu Gln Gln
            660   665   670

Leu Leu Val Ser Gly Pro Gly Lys Lys Pro Glu Asp Ser Arg Val
        675   680   685

<210> 5
<211> 2757
<212> DNA
<213> Homo sapiens

<400> 5
cccacgcgtc cggcgaggag ctgtgccttc cacctctcca gccccggcag gacggggggcg 60
gccgccgcga acccggggcg gggacagcac gcagcctcga ggcgcgcacc cccgcccggc 120
agcggccccg acacccgggg cgagcgggaa agcggcagcg gcggcggcgg cggcggcggc 180
gggggaagga tgcaggggaa gaagccgggc ggttcgtcgg gcggcggccg gagcggcgag 240
ctgcaggggg acgaggcgca gaggaacaag aaaaagaaaa agaaggtgtc ctgcttttcc 300
aacatcaaga tcttcctggt gtccgagtgc gccctgatgc tggcgcaggg cacggtgggc 360
gcctacctgg tgagcgtcct gaccaccctg gagcgtaggt tcaacctgca gagcgctgac 420
gtgggtgtga tcgctagcag cttcgagatc gggaacctgg cgctcatcct cttcgtgagc 480
tacttcgggg cacgcgggca ccggccgcgc ctgatcggct cggcggcat cgtcatggcg 540
ctgggcgcgc tgctgtcggc gctgcccgag ttcctgaccc accagtacaa gtacgaggcg 600
ggcgagatcc gctggggcgc cgagggccgc gacgtctgcg cagccaacgg ctcgggcggc 660
gacgaggggc ccgaccccga cctcatctgc cgcaaccgga cggctaccaa catgatgtac 720
ttgctgctca ttggggccca ggtgctcctg ggcatcggtg ctacccctgt gcagcccctg 780
ggcgtctcct acatcgacga ccacgtgcgg aggaaggact cctcgctcta tataggaatc 840
ctgttcacga tgctggtatt tggaccagcc tgcgggttta tcctgggctc tttctgtacc 900
aaaatctacg tggatgcggt cttcattgac acaagtaacc tggacatcac tccggacgac 960
ccccgctgga tcggagcctg gtggggtggc tttctgctct gcggtgcctt actcttcttc 1020
tcttccctct tgatgtttgg gtttccacag tccctgcccc cgcactcaga ccccgccatg 1080
gaaagcgagc aggccatgct ctccgaaaga gaatacgaga gacccaagcc cagcaacggg 1140
gtcctgaggc accccctgga gccagacagc agtgcctcct gtttccagca gctgagagtg 1200
atcccgaagg tcaccaagca cctgctctca aaccctgtgt tcacctgcat catcctggcc 1260
gcctgcatgg agattgcagt ggtggctggc ttcgctgcct ttttggggaa gtacctggag 1320
cagcagttta acctcaccac ctcttctgcc aaccagctgc ttgggatgac tgcgatcccg 1380
tgtgcttgtc tgggtatctt cctgggaggt cttttggtga agaagctcag cctgtctgcc 1440
ctgggggcca ttcggatggc catgctcgtc aacctggtgt ccactgcttg ctacgtctcc 1500
ttcctcttcc tgggctgcga cactggccct gtggctgggg ttactgttcc ctatggaaac 1560
agcacagcac ctggctcagc cctggacccc tactcgccct gcaataataa ctgtgaatgc 1620
caaaccgatt ccttcactcc agtgtgtggg gcagatggca tcacctacct gtctgcctgc 1680
tttgctggct gcaacagcac gaatctcacg ggctgtgcgt gcctcaccac cgtccctgct 1740
gagaacgcaa ccgtggttcc tggaaaatgc cccagtcctg ggtgccaaga ggccttcctc 1800
actttcctct gtgtgatgtg tatctgcagc ctgatcggtg ccatggcaca gacaccctca 1860
gtcatcatcc tcatcaggac agtcagccct gaactcaagt cttacgcttt gggagttctt 1920
tttctcctcc ttcgtttgtt gggcttcatc cctccacccc tcatcttcgg gctggcatc 1980
gactccacct gcctgttctg gagcacgttc tgtggggagc aaggcgcctg cgtcctctac 2040
gacaatgtgg tctaccgata cctgtatgtc agcatcgcca tcgcgctcaa atccttcgcc 2100
ttcatcctgt acaccaccac gtggcagtgc ctgaggaaaa actataaacg ctacatcaaa 2160
aaccacgagg gcgggctgag caccagtgag ttctttgcct ctactctgac cctagacaac 2220
ctggggaggg accctgtgcc cgcaaaccag acacatagga caaagtttat ctataacctg 2280
gaagaccatg agtggtgtga aaacatggag tccgttttat agtgactaaa ggagggctga 2340
actctgtatt agtaatccaa gggtcatttt tttcttaaaa aagaaaaaa aggttccaaa 2400
aaaaaccaaa actcagtaca cacacaggg cacagatgca cacacgca gacagacaca 2460
ccgactttgt ccttttttctc agcatcagag ccagacagga ttcagaataa ggagagaatg 2520
acatcgtgcg gcagggtcct ggaggccact cgcgcggctg ggccacagag tctactttga 2580

8

```
aggcacctca tggttttcag gatgctgaca gctgcaagca acaggcactg ccaaattcag 2640
ggaacagtgg tggccagctt ggaggatgga catttctgga tacacataca catacaaaac 2700
agaaaacatt ttttaaaaga agtttcctaa aataaaaaaa ataaaaaaaa aaaaaaa    2757
```

<210> 6
<211> 710
<212> PRT
<213> Homo sapiens

<400> 6

```
Met Gln Gly Lys Lys Pro Gly Gly Ser Ser Gly Gly Gly Arg Ser Gly
 1               5                  10                  15

Glu Leu Gln Gly Asp Glu Ala Gln Arg Asn Lys Lys Lys Lys Lys Lys
                20                  25                  30

Val Ser Cys Phe Ser Asn Ile Lys Ile Phe Leu Val Ser Glu Cys Ala
            35                  40                  45

Leu Met Leu Ala Gln Gly Thr Val Gly Ala Tyr Leu Val Ser Val Leu
        50                  55                  60

Thr Thr Leu Glu Arg Arg Phe Asn Leu Gln Ser Ala Asp Val Gly Val
65                  70                  75                  80

Ile Ala Ser Ser Phe Glu Ile Gly Asn Leu Ala Leu Ile Leu Phe Val
                85                  90                  95

Ser Tyr Phe Gly Ala Arg Gly His Arg Pro Arg Leu Ile Gly Cys Gly
            100                 105                 110

Gly Ile Val Met Ala Leu Gly Ala Leu Leu Ser Ala Leu Pro Glu Phe
        115                 120                 125

Leu Thr His Gln Tyr Lys Tyr Glu Ala Gly Glu Ile Arg Trp Gly Ala
        130                 135                 140

Glu Gly Arg Asp Val Cys Ala Ala Asn Gly Ser Gly Gly Asp Glu Gly
145                 150                 155                 160

Pro Asp Pro Asp Leu Ile Cys Arg Asn Arg Thr Ala Thr Asn Met Met
                165                 170                 175

Tyr Leu Leu Leu Ile Gly Ala Gln Val Leu Leu Gly Ile Gly Ala Thr
            180                 185                 190

Pro Val Gln Pro Leu Gly Val Ser Tyr Ile Asp Asp His Val Arg Arg
            195                 200                 205

Lys Asp Ser Ser Leu Tyr Ile Gly Ile Leu Phe Thr Met Leu Val Phe
        210                 215                 220

Gly Pro Ala Cys Gly Phe Ile Leu Gly Ser Phe Cys Thr Lys Ile Tyr
225                 230                 235                 240

Val Asp Ala Val Phe Ile Asp Thr Ser Asn Leu Asp Ile Thr Pro Asp
                245                 250                 255
```

9

Asp Pro Arg Trp Ile Gly Ala Trp Trp Gly Gly Phe Leu Leu Cys Gly
        260   265   270

Ala Leu Leu Phe Phe Ser Ser Leu Leu Met Phe Gly Phe Pro Gln Ser
        275   280   285

Leu Pro Pro His Ser Asp Pro Ala Met Glu Ser Glu Gln Ala Met Leu
290   295   300

Ser Glu Arg Glu Tyr Glu Arg Pro Lys Pro Ser Asn Gly Val Leu Arg
305   310   315   320

His Pro Leu Glu Pro Asp Ser Ser Ala Ser Cys Phe Gln Gln Leu Arg
            325   330   335

Val Ile Pro Lys Val Thr Lys His Leu Leu Ser Asn Pro Val Phe Thr
            340   345   350

Cys Ile Ile Leu Ala Ala Cys Met Glu Ile Ala Val Val Ala Gly Phe
        355   360   365

Ala Ala Phe Leu Gly Lys Tyr Leu Glu Gln Gln Phe Asn Leu Thr Thr
    370   375   380

Ser Ser Ala Asn Gln Leu Leu Gly Met Thr Ala Ile Pro Cys Ala Cys
385   390   395   400

Leu Gly Ile Phe Leu Gly Gly Leu Leu Val Lys Lys Leu Ser Leu Ser
            405   410   415

Ala Leu Gly Ala Ile Arg Met Ala Met Leu Val Asn Leu Val Ser Thr
            420   425   430

Ala Cys Tyr Val Ser Phe Leu Phe Leu Gly Cys Asp Thr Gly Pro Val
        435   440   445

Ala Gly Val Thr Val Pro Tyr Gly Asn Ser Thr Ala Pro Gly Ser Ala
    450   455   460

Leu Asp Pro Tyr Ser Pro Cys Asn Asn Asn Cys Glu Cys Gln Thr Asp
465   470   475   480

Ser Phe Thr Pro Val Cys Gly Ala Asp Gly Ile Thr Tyr Leu Ser Ala
            485   490   495

Cys Phe Ala Gly Cys Asn Ser Thr Asn Leu Thr Gly Cys Ala Cys Leu
            500   505   510

Thr Thr Val Pro Ala Glu Asn Ala Thr Val Val Pro Gly Lys Cys Pro
        515   520   525

Ser Pro Gly Cys Gln Glu Ala Phe Leu Thr Phe Leu Cys Val Met Cys
    530   535   540

Ile Cys Ser Leu Ile Gly Ala Met Ala Gln Thr Pro Ser Val Ile Ile
545   550   555   560

10

Leu Ile Arg Thr Val Ser Pro Glu Leu Lys Ser Tyr Ala Leu Gly Val
              565   570   575

Leu Phe Leu Leu Leu Arg Leu Leu Gly Phe Ile Pro Pro Pro Leu Ile
              580   585   590

Phe Gly Ala Gly Ile Asp Ser Thr Cys Leu Phe Trp Ser Thr Phe Cys
         595   600   605

Gly Glu Gln Gly Ala Cys Val Leu Tyr Asp Asn Val Val Tyr Arg Tyr
     610   615   620

Leu Tyr Val Ser Ile Ala Ile Ala Leu Lys Ser Phe Ala Phe Ile Leu
625   630   635   640

Tyr Thr Thr Thr Trp Gln Cys Leu Arg Lys Asn Tyr Lys Arg Tyr Ile
              645   650   655

Lys Asn His Glu Gly Gly Leu Ser Thr Ser Glu Phe Phe Ala Ser Thr
              660   665   670

Leu Thr Leu Asp Asn Leu Gly Arg Asp Pro Val Pro Ala Asn Gln Thr
              675   680   685

His Arg Thr Lys Phe Ile Tyr Asn Leu Glu Asp His Glu Trp Cys Glu
     690   695   700

Asn Met Glu Ser Val Leu
705   710

<210> 7
<211> 3692
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (713)
<223> y = c or t

<220>
<221> misc_feature
<222> (2397)
<223> k = g or t

<400> 7
ctgatttctc ttcggctgga cggaggctgc ctcctcacgc ggctcccaac tattcccgta 60
gctcagtgcc cccctcccgc cgctctactc agccaggcag acagactgac agactcgcta 120
gtcggcagct tcactcccga gggtgccgcg agcccaggcg cgaacacccc ggtacccctg 180
gcgcagcgag gtgggatgct gtacggacag cagcgctaag tgccccccca ccccggcgc 240
agggtgcact cgctcctggc cgcgggccca gcggcggcgg cggcggcggc ggcggagggg 300
atgagcccgg gacgcgcgag cgcctgcct caagctaccg cccggagagg gacgccgagt 360
agggctcatc gcagtaccgc gcggacccct gcccctgtg gcacgcggct gcggagcctt 420
gaagccgtgt ctgtgatcag gatgcactgg gcgcctcgca gctggtgagg atgccctgct 480
gcgcggccct gcgcccccag ccccagtccc aggtgggcaa gactgactgg gcccggcttc 540

```
ggcccctcgt gccggtggat gaaacgtgcc ggagtgcttg ggtgccatca gctatcaaat 600
ctgaattcta agcgccatgg acgaaggcac tggactgcag cccggggcgg gagagcagct 660
ggaggcgccg gccactgcag aagctgtcca agagaggtgc gagccggaga ccytcaggtc 720
taagagttta ccggtcctca gcagcgcctc ctgccggcca agcctcagtc ccactagtgg 780
agacgccaac ccggcctttg gctgtgtgga ttcttcgggc caccaggagt tgaagcaagg 840
cccgaacccg ttggccccca gtccctctgc ccgtccact tcggcggggc tcggggactg 900
taaccacagg gtggacctca gcaaaacctt ctcggtgtcc tccgccttgg ccatgctcca 960
ggagagaagg tgcctctacg tggtcctcac ggattcccgt tgcttcctgg tgtgcatgtg 1020
ctttctgacc ttcatccagg cgttaatggt ctctgggtac ctgagcagcg taattaccac 1080
cattgaaagg cgctacagtc tgaagagttc cgagtcgggg ctgctggtca gctgctttga 1140
catcgggaac ctggtggtgg tggtgttcgt cagctacttc ggcggccggg gtcggcggcc 1200
cctgtggctg gccgtgggtg gactcctcat cgccttcggg cagccctct tcgccttacc 1260
tcacttcatc tcgccccct accagatcca agagttgaac gcctcggccc ccaacgacgg 1320
cctgtgtcag ggtggcaact ccaccgccac tttggagcct ccggcctgtc cgaaggactc 1380
gggaggaaat aatcactggg tctacctggc tttattcatt tgcgcgcaga ttctcattgg 1440
aatgggctcc acacctattt ataccctggg accaacctac ttagatgaca atgtcaagaa 1500
agaaaactcc tccttgtacc tagccatcat gtatgtcatg ggagcacttg ccctgcagt 1560
gggatattta ttaggtggac ttcttattgg tttttatgtt gatcccagaa atcctgttca 1620
ccttgaccag aatgaccctc gtttcattgg aaactggtgg agtggattcc tcctttgtgc 1680
cattgcaatg tttcttgtga tattcccaat gtttactttc ccaaaaaagc ttccacctcg 1740
acacaagaaa aagaaaaaga aaaattttc tgttgatgct gttagtgatg acgatgttct 1800
gaaggagaaa tcaaacaaca gtgaacaagc ggacaaaaaa gtttcttcga tgggatttgg 1860
aaaggatgtc agagacctac caagagcagc tgtcaggatc ttaagcaaca tgacattcct 1920
ttttgtgagt ttgtcataca cagctgagag tgccattgta actgctttca ttaccttcat 1980
tcccaagttc atcgagtcac agtttggtat cccagcctcc aatgccagca tctacactgg 2040
ggttattatc gtccccagtg ctggtgttgg tattgtcctc ggaggctaca ttataaaaaa 2100
attgaaactt ggtgccagag aatctgcaaa actagcaatg atctgcagtg gtgtgtcttt 2160
actatgtttt tcaacccat ttattgttgg atgtgaaagc attaatctag ggggcataaa 2220
catcccttat acaacaggac cttctctcac catgccccat aggaatctga caggaagctg 2280
caacgttaat tgtggttgta aaatacacga gtatgagcca gtctgtggat cagatggaat 2340
tacatacttt aacccttgtc tggctggctg tgttaatagt ggtaatctta gcactgkgat 2400
acggaattat acagaatgca cctgtgtcca aagtcgccaa gtgatcactc cacccaccgt 2460
gggacagcga agtcagctcc gtgtggttat tgtcaagact tatctcaatg agaacggcta 2520
tgctgtgtct gggaaatgta acggacctg caatactctt atcccattct tagtttttct 2580
tttcatagtc accttcatca cagcatgtgc ccaaccatca gctatcatag taacactcag 2640
gtccgtagaa gatgaggaga gacctttgc actgggaatg cagtttgttt tgttgcgaac 2700
acttgcatac attcctactc caatctactt tggagcagtc attgacacca cctgcatgct 2760
ctggcaacag gaatgtggtg tgcagggttc ttgctgggag tacaacgtga cgtcgtttcg 2820
ttttgtgtat tttggtttgg ctgccggcct caaattcgtt gggtttattt ttatttttct 2880
ggcctggtac tccataaat acaaggagga tggactgcag aggcggaggc agagagaatt 2940
tccctgagc accgtgagtg agagtgggg acaccccgac aatgcccgga ctagatcttg 3000
cccagctttc agcacccagg gagaattcca cgaagagact ggcctgcaaa aagggatcca 3060
gtgcgcagca cagacctacc cggggccctt cccagaagca ataagttcct ctgcggaccc 3120
ggggctggaa gagagccccg ctgccttgga gccgccctcc tgaagcttga aaatggaaga 3180
atttagtttt gttggttgaa ttgaaaatgg cgacttgaga aacaactgtg ccttctttc 3240
tttctttctt tttttaacc tctacagaca caatcctcaa accaacaaaa ctcagtatac 3300
acagccgcta ttcattgagg gctggatacc tcaacaagac tgagagcctt ccccgcttc 3360
tctccaagaa ggagacgttc agctagattt gttcccattt ccgttgtgtt aattcaaagc 3420
tcatgctccc ctacggtaca ggctgaggta cacggttagc aaaaccatgg gaaggggaat 3480
ggcggtgcat atcattaact aacactccaa acaaaggtga gcttcccag gacttggcat 3540
ttccaaatca aagttttag atatgaacac ctactgtgag ttctgctaca aagcacaaat 3600
gaatttgtct caactatgca atttgattgg aaaaatgtat gtgcagcatg ttacatttac 3660
tttcacggaa taaagcagat atgtttctga aa                        3692
```

<210> 8
<211> 848
<212> PRT

<213> Homo sapiens

<220>
<221> PEPTIDE
<222> (33)
<223> Xaa = Leu or Phe

<220>
<221> PEPTIDE
<222> (594)
<223> Xaa = Gly or Val

<400> 8

Met	Asp	Glu	Gly	Thr	Gly	Leu	Gln	Pro	Gly	Ala	Gly	Glu	Gln	Leu	Glu
1				5					10					15	

| Ala | Pro | Ala | Thr | Ala | Glu | Ala | Val | Gln | Glu | Arg | Cys | Glu | Pro | Glu | Thr |
| | | | 20 | | | | | 25 | | | | | 30 | | |

| Xaa | Arg | Ser | Lys | Ser | Leu | Pro | Val | Leu | Ser | Ser | Ala | Ser | Cys | Arg | Pro |
| | | 35 | | | | | 40 | | | | | 45 | | | |

| Ser | Leu | Ser | Pro | Thr | Ser | Gly | Asp | Ala | Asn | Pro | Ala | Phe | Gly | Cys | Val |
| | 50 | | | | | 55 | | | | | 60 | | | | |

| Asp | Ser | Ser | Gly | His | Gln | Glu | Leu | Lys | Gln | Gly | Pro | Asn | Pro | Leu | Ala |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |

| Pro | Ser | Pro | Ser | Ala | Pro | Ser | Thr | Ser | Ala | Gly | Leu | Gly | Asp | Cys | Asn |
| | | | | 85 | | | | | 90 | | | | | 95 | |

| His | Arg | Val | Asp | Leu | Ser | Lys | Thr | Phe | Ser | Val | Ser | Ser | Ala | Leu | Ala |
| | | | 100 | | | | | 105 | | | | | 110 | | |

| Met | Leu | Gln | Glu | Arg | Arg | Cys | Leu | Tyr | Val | Val | Leu | Thr | Asp | Ser | Arg |
| | | 115 | | | | | 120 | | | | | 125 | | | |

| Cys | Phe | Leu | Val | Cys | Met | Cys | Phe | Leu | Thr | Phe | Ile | Gln | Ala | Leu | Met |
| | 130 | | | | | 135 | | | | | 140 | | | | |

| Val | Ser | Gly | Tyr | Leu | Ser | Ser | Val | Ile | Thr | Thr | Ile | Glu | Arg | Arg | Tyr |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |

| Ser | Leu | Lys | Ser | Ser | Glu | Ser | Gly | Leu | Leu | Val | Ser | Cys | Phe | Asp | Ile |
| | | | 165 | | | | | 170 | | | | | 175 | | |

| Gly | Asn | Leu | Val | Val | Val | Val | Phe | Val | Ser | Tyr | Phe | Gly | Gly | Arg | Gly |
| | | | 180 | | | | | 185 | | | | | 190 | | |

| Arg | Arg | Pro | Leu | Trp | Leu | Ala | Val | Gly | Gly | Leu | Leu | Ile | Ala | Phe | Gly |
| | | 195 | | | | | 200 | | | | | 205 | | | |

| Ala | Ala | Leu | Phe | Ala | Leu | Pro | His | Phe | Ile | Ser | Pro | Pro | Tyr | Gln | Ile |
| | 210 | | | | | 215 | | | | | 220 | | | | |

| Gln | Glu | Leu | Asn | Ala | Ser | Ala | Pro | Asn | Asp | Gly | Leu | Cys | Gln | Gly | Gly |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |

Asn Ser Thr Ala Thr Leu Glu Pro Pro Ala Cys Pro Lys Asp Ser Gly
                245   250   255

Gly Asn Asn His Trp Val Tyr Leu Ala Leu Phe Ile Cys Ala Gln Ile
                260   265   270

Leu Ile Gly Met Gly Ser Thr Pro Ile Tyr Thr Leu Gly Pro Thr Tyr
                275   280   285

Leu Asp Asp Asn Val Lys Lys Glu Asn Ser Ser Leu Tyr Leu Ala Ile
        290   295   300

Met Tyr Val Met Gly Ala Leu Gly Pro Ala Val Gly Tyr Leu Leu Gly
305   310   315   320

Gly Leu Leu Ile Gly Phe Tyr Val Asp Pro Arg Asn Pro Val His Leu
                325   330   335

Asp Gln Asn Asp Pro Arg Phe Ile Gly Asn Trp Trp Ser Gly Phe Leu
                340   345   350

Leu Cys Ala Ile Ala Met Phe Leu Val Ile Phe Pro Met Phe Thr Phe
        355   360   365

Pro Lys Lys Leu Pro Pro Arg His Lys Lys Lys Lys Lys Lys Lys Phe
    370   375   380

Ser Val Asp Ala Val Ser Asp Asp Asp Val Leu Lys Glu Lys Ser Asn
385   390   395   400

Asn Ser Glu Gln Ala Asp Lys Lys Val Ser Ser Met Gly Phe Gly Lys
                405   410   415

Asp Val Arg Asp Leu Pro Arg Ala Ala Val Arg Ile Leu Ser Asn Met
                420   425   430

Thr Phe Leu Phe Val Ser Leu Ser Tyr Thr Ala Glu Ser Ala Ile Val
        435   440   445

Thr Ala Phe Ile Thr Phe Ile Pro Lys Phe Ile Glu Ser Gln Phe Gly
    450   455   460

Ile Pro Ala Ser Asn Ala Ser Ile Tyr Thr Gly Val Ile Ile Val Pro
465   470   475   480

Ser Ala Gly Val Gly Ile Val Leu Gly Gly Tyr Ile Ile Lys Lys Leu
                485   490   495

Lys Leu Gly Ala Arg Glu Ser Ala Lys Leu Ala Met Ile Cys Ser Gly
            500   505   510

Val Ser Leu Leu Cys Phe Ser Thr Leu Phe Ile Val Gly Cys Glu Ser
        515   520   525

Ile Asn Leu Gly Gly Ile Asn Ile Pro Tyr Thr Thr Gly Pro Ser Leu
        530   535   540

14

Thr Met Pro His Arg Asn Leu Thr Gly Ser Cys Asn Val Asn Cys Gly
545   550   555   560

Cys Lys Ile His Glu Tyr Glu Pro Val Cys Gly Ser Asp Gly Ile Thr
                565   570   575

Tyr Phe Asn Pro Cys Leu Ala Gly Cys Val Asn Ser Gly Asn Leu Ser
                580   585   590

Thr Xaa Ile Arg Asn Tyr Thr Glu Cys Thr Cys Val Gln Ser Arg Gln
        595   600   605

Val Ile Thr Pro Pro Thr Val Gly Gln Arg Ser Gln Leu Arg Val Val
        610   615   620

Ile Val Lys Thr Tyr Leu Asn Glu Asn Gly Tyr Ala Val Ser Gly Lys
625   630   635   640

Cys Lys Arg Thr Cys Asn Thr Leu Ile Pro Phe Leu Val Phe Leu Phe
                645   650   655

Ile Val Thr Phe Ile Thr Ala Cys Ala Gln Pro Ser Ala Ile Ile Val
                660   665   670

Thr Leu Arg Ser Val Glu Asp Glu Glu Arg Pro Phe Ala Leu Gly Met
        675   680   685

Gln Phe Val Leu Leu Arg Thr Leu Ala Tyr Ile Pro Thr Pro Ile Tyr
        690   695   700

Phe Gly Ala Val Ile Asp Thr Thr Cys Met Leu Trp Gln Gln Glu Cys
705   710   715   720

Gly Val Gln Gly Ser Cys Trp Glu Tyr Asn Val Thr Ser Phe Arg Phe
                725   730   735

Val Tyr Phe Gly Leu Ala Ala Gly Leu Lys Phe Val Gly Phe Ile Phe
                740   745   750

Ile Phe Leu Ala Trp Tyr Ser Ile Lys Tyr Lys Glu Asp Gly Leu Gln
                755   760   765

Arg Arg Arg Gln Arg Glu Phe Pro Leu Ser Thr Val Ser Glu Arg Val
        770   775   780

Gly His Pro Asp Asn Ala Arg Thr Arg Ser Cys Pro Ala Phe Ser Thr
785   790   795   800

Gln Gly Glu Phe His Glu Glu Thr Gly Leu Gln Lys Gly Ile Gln Cys
                805   810   815

Ala Ala Gln Thr Tyr Pro Gly Pro Phe Pro Glu Ala Ile Ser Ser Ser
                820   825   830

Ala Asp Pro Gly Leu Glu Glu Ser Pro Ala Ala Leu Glu Pro Pro Ser
        835   840   845

15

<210> 9
<211> 3381
<212> DNA
<213> Homo sapiens

<400> 9
cgcaaagaaa tggctcaaaa gcttcagctc tttctgtgcc ctgggagctg agatgcacgt 60
cagtggcctt gccagcgtgg ccaattctct gctgactgcc agaaaaaaga ggccaggaag 120
aaagaggaaa gagaagagat cgctcagggg tgagaccatg cccttcatct tttctttcc 180
ctaatctcct ctgcttgtgt ccacccacac tctccccacc tggcaaaatt gttcaaaatt 240
gctgtggagt ttacctcagt ttcctcttc agtctgtggt gtgtggtcca tcctcttgct 300
gagcacattg aaaggaactg gctatctttg atctcttcct ccagatcaga gtcaaggaat 360
gtgtttataa tggacacttc atccaaagaa aatatccagt tgttctgcaa aacttcagtg 420
caacctgttg gaaggccttc tttaaaaca gaatatccct cctcagaaga aaagcaacca 480
tgctgtggtg aactaaaggt gttcttgtgt gccttgtctt ttgtttactt tgccaaagca 540
ttggcagaag gctatctgaa gagcaccatc actcagatag agagaaggtt tgatatccct 600
tcttcactgg tgggagttat tgatggtagt tttgaaattg ggaatctctt agttataaca 660
tttgttagct actttggagc caaacttcac aggccaaaaa taattggagc agggtgtgta 720
atcatgggag ttggaacact gctcattgca atgcctcagt tcttcatgga gcagtacaaa 780
tatgagagat attctccttc ctccaattcc actctcagca tctctccgtg tctcctagag 840
tcaagcagtc aattaccagt ttcagttatg gaaaaatcaa aatccaaaat aagtaacgaa 900
tgtgaagtgg acactagctc ttccatgtgg atttatgttt tcctgggcaa tcttcttcgt 960
ggaataggag aaactcccat tcagcctttg ggcattgcct acctggatga ttttgccagt 1020
gaagacaatg cagctttcta tattgggtgt gtgcagacgg ttgcaattat aggaccaatc 1080
tttggtttcc tgttaggctc attatgtgcc aaactatatg ttgacattgg ctttgtaaac 1140
ctagatcaca taaccattac cccaaaagat ccccagtggg taggagcctg gtggcttggc 1200
tatctaatag caggaatcat aagtcttctt gcagctgtgc ctttctggta tttaccaaag 1260
agtttaccaa gatcccaaag tagagaggat tctaattctt cctctgagaa atccaagttt 1320
attatagatg atcacacaga ctaccaaaca ccccagggag aaaatgcaaa aataatggaa 1380
atggcaagag attttcttcc atcactgaag aatctttttg gaaacccagt atacttccta 1440
tatttatgta caagcactgt tcagttcaat tctctgttcg gcatggtgac gtacaaacca 1500
aagtacattg agcagcagta tggacagtca tcctccaggg ccaactttgt gatcgggctc 1560
atcaacattc cagcagtggc ccttggaata ttctctgggg ggatagttat gaaaaaattc 1620
agaatcagtg tgtgtggagc tgcaaaactc tacttgggat catctgtctt tggttacctc 1680
ctatttcttt ccctgtttgc actgggctgt gaaaattctg atgtggcagg actaactgtc 1740
tcctaccaag gaaccaaacc tgtctcttat catgaacgag ctctcttttc agattgcaac 1800
tcaagatgca aatgttcaga gacaaaatgg gaacccatgt gcggtgaaaa tggaatcaca 1860
tatgtatcag cttgtcttgc tggttgtcaa acctccaaca ggagtggaaa aaatattata 1920
ttttacaact gcacttgtgt gggaattgca gcttctaaat ccggaaattc ctcaggcata 1980
gtgggaagat gtcagaaaga caatggatgt ccccaaatgt ttctgtattt ccttgtaatt 2040
tcagtcatca catcctatac tttatcccta ggtggcatac ctggatacat attacttctg 2100
aggtgcatta agccacagct taagtctttt gccttgggta tctacacatt agcaataaga 2160
gttcttgcag gaatcccagc tccagtgtat tttggagttt tgattgatac ttcatgcctc 2220
aaatggggat ttaaaagatg tggaagtaga ggatcatgca gattatatga ttcaaatgtc 2280
ttcagacata tatatttggg actaactgtg atactgggca cagtgtcaat tctcctaagc 2340
attgcagtac ttttcatttt aaagaaaaat tatgtttcaa aacacagaag ttttataacc 2400
aagagagaaa gaacaatggt gtctacaaga ttccaaaagg aaaattacac tacaagtgat 2460
catctgctac aacccaacta ctggccaggc aaggaaactc aactttagaa acatgatgac 2520
tggaagtcat gtcttctaat tggttgacat tttgcaaaca aataaattgt aatcaaaaga 2580
gctctaaatt tgtaatttct ttctcctttc aaaaaatgtc tactttgttt tggtcctagg 2640
cattaggtaa tataactgat aatatactga aatatataat ggaagatgca gatgataaaa 2700
ctaattttga actttttaat ttatataaat tattttatat catttactta tttcactta 2760
ttttgctttg tgctcattga tatatattag ctgtactcct agaagaacaa ttgtctctat 2820
tgtcacacat ggttatattt aaagtaattt ctgaactgtg taatgtgtct agagtaagca 2880
aatactgcta acaattaact cataccttgg gttccttcaa gtattactcc tatagtattt 2940

16

```
tctcccatag ctgtcttcat ctgtgtattt taataatgat cttaggatgg agcagaacat 3000
ggagaggaag atttcatttt aagctcctcc ttttccttga aatacaataa tttatataga 3060
aatgtgtagc agcaaattat attggggatt agaattttga attaatagct ctcctactat 3120
taatttacat gtgctttttg tgtggcgcta taagtgacta tggttgtaaa gtaataaaat 3180
tgatgttaac atgcccaatt attgttcttt tatgaattca atgaatttaa aactattgtt 3240
aaatataata ctgccccact ttaatatatg taagcaactt cctacttata cacgacgtgt 3300
tcctaaaaca tgtttgaaag gtgaatttct gaaagtctcc cataaatgta ggtgttacaa 3360
caggaaaaaa aaaaaaaaaa a                                          3381
```

<210> 10
<211> 712
<212> PRT
<213> Homo sapiens

<400> 10

```
Met Asp Thr Ser Ser Lys Glu Asn Ile Gln Leu Phe Cys Lys Thr Ser
 1               5                  10                  15

Val Gln Pro Val Gly Arg Pro Ser Phe Lys Thr Glu Tyr Pro Ser Ser
            20                  25                  30

Glu Glu Lys Gln Pro Cys Cys Gly Glu Leu Lys Val Phe Leu Cys Ala
        35                  40                  45

Leu Ser Phe Val Tyr Phe Ala Lys Ala Leu Ala Glu Gly Tyr Leu Lys
        50                  55                  60

Ser Thr Ile Thr Gln Ile Glu Arg Arg Phe Asp Ile Pro Ser Ser Leu
65                  70                  75                  80

Val Gly Val Ile Asp Gly Ser Phe Glu Ile Gly Asn Leu Leu Val Ile
                85                  90                  95

Thr Phe Val Ser Tyr Phe Gly Ala Lys Leu His Arg Pro Lys Ile Ile
            100                 105                 110

Gly Ala Gly Cys Val Ile Met Gly Val Gly Thr Leu Leu Ile Ala Met
        115                 120                 125

Pro Gln Phe Phe Met Glu Gln Tyr Lys Tyr Glu Arg Tyr Ser Pro Ser
    130                 135                 140

Ser Asn Ser Thr Leu Ser Ile Ser Pro Cys Leu Leu Glu Ser Ser Ser
145                 150                 155                 160

Gln Leu Pro Val Ser Val Met Glu Lys Ser Lys Ser Lys Ile Ser Asn
                165                 170                 175

Glu Cys Glu Val Asp Thr Ser Ser Ser Met Trp Ile Tyr Val Phe Leu
            180                 185                 190

Gly Asn Leu Leu Arg Gly Ile Gly Glu Thr Pro Ile Gln Pro Leu Gly
        195                 200                 205

Ile Ala Tyr Leu Asp Asp Phe Ala Ser Glu Asp Asn Ala Ala Phe Tyr
    210                 215                 220
```

17

```
Ile Gly Cys Val Gln Thr Val Ala Ile Ile Gly Pro Ile Phe Gly Phe
225             230             235             240

Leu Leu Gly Ser Leu Cys Ala Lys Leu Tyr Val Asp Ile Gly Phe Val
            245             250             255

Asn Leu Asp His Ile Thr Ile Thr Pro Lys Asp Pro Gln Trp Val Gly
            260             265             270

Ala Trp Trp Leu Gly Tyr Leu Ile Ala Gly Ile Ile Ser Leu Leu Ala
        275             280             285

Ala Val Pro Phe Trp Tyr Leu Pro Lys Ser Leu Pro Arg Ser Gln Ser
    290             295             300

Arg Glu Asp Ser Asn Ser Ser Ser Glu Lys Ser Lys Phe Ile Ile Asp
305             310             315             320

Asp His Thr Asp Tyr Gln Thr Pro Gln Gly Glu Asn Ala Lys Ile Met
            325             330             335

Glu Met Ala Arg Asp Phe Leu Pro Ser Leu Lys Asn Leu Phe Gly Asn
            340             345             350

Pro Val Tyr Phe Leu Tyr Leu Cys Thr Ser Thr Val Gln Phe Asn Ser
        355             360             365

Leu Phe Gly Met Val Thr Tyr Lys Pro Lys Tyr Ile Glu Gln Gln Tyr
    370             375             380

Gly Gln Ser Ser Ser Arg Ala Asn Phe Val Ile Gly Leu Ile Asn Ile
385             390             395             400

Pro Ala Val Ala Leu Gly Ile Phe Ser Gly Gly Ile Val Met Lys Lys
            405             410             415

Phe Arg Ile Ser Val Cys Gly Ala Ala Lys Leu Tyr Leu Gly Ser Ser
            420             425             430

Val Phe Gly Tyr Leu Leu Phe Leu Ser Leu Phe Ala Leu Gly Cys Glu
        435             440             445

Asn Ser Asp Val Ala Gly Leu Thr Val Ser Tyr Gln Gly Thr Lys Pro
    450             455             460

Val Ser Tyr His Glu Arg Ala Leu Phe Ser Asp Cys Asn Ser Arg Cys
465             470             475             480

Lys Cys Ser Glu Thr Lys Trp Glu Pro Met Cys Gly Glu Asn Gly Ile
            485             490             495

Thr Tyr Val Ser Ala Cys Leu Ala Gly Cys Gln Thr Ser Asn Arg Ser
        500             505             510

Gly Lys Asn Ile Ile Phe Tyr Asn Cys Thr Cys Val Gly Ile Ala Ala
        515             520             525
```

18

```
Ser Lys Ser Gly Asn Ser Ser Gly Ile Val Gly Arg Cys Gln Lys Asp
    530             535             540

Asn Gly Cys Pro Gln Met Phe Leu Tyr Phe Leu Val Ile Ser Val Ile
545             550             555             560

Thr Ser Tyr Thr Leu Ser Leu Gly Gly Ile Pro Gly Tyr Ile Leu Leu
            565             570             575

Leu Arg Cys Ile Lys Pro Gln Leu Lys Ser Phe Ala Leu Gly Ile Tyr
        580             585             590

Thr Leu Ala Ile Arg Val Leu Ala Gly Ile Pro Ala Pro Val Tyr Phe
        595             600             605

Gly Val Leu Ile Asp Thr Ser Cys Leu Lys Trp Gly Phe Lys Arg Cys
    610             615             620

Gly Ser Arg Gly Ser Cys Arg Leu Tyr Asp Ser Asn Val Phe Arg His
625             630             635             640

Ile Tyr Leu Gly Leu Thr Val Ile Leu Gly Thr Val Ser Ile Leu Leu
            645             650             655

Ser Ile Ala Val Leu Phe Ile Leu Lys Lys Asn Tyr Val Ser Lys His
        660             665             670

Arg Ser Phe Ile Thr Lys Arg Glu Arg Thr Met Val Ser Thr Arg Phe
        675             680             685

Gln Lys Glu Asn Tyr Thr Thr Ser Asp His Leu Leu Gln Pro Asn Tyr
    690             695             700

Trp Pro Gly Lys Glu Thr Gln Leu
705             710
```

```
<210> 11
<211> 2763
<212> DNA
<213> Homo sapiens

<400> 11
ggcacgaggc gctgcgcggc gcggcggccg ggccctcgag acggggacgg acacaccagc 60
ccctcggata ccacttggcc actcccgctg aggccactcc cactgcgtgg ctgaagcctc 120
gaggtcacca ggcggaggcg cggagatgcc cctgcatcag ctgggggaca agccgctcac 180
cttccccagc cccaactcag ccatggaaaa cgggcttgac cacaccccac ccagcaggag 240
ggcatccccg ggcacacccc tgagccccgg gtccctccgc tccgctgccc atagcccccct 300
ggacaccagc aagcagcccc tctgccagct ctgggccgag aagcatggcg cccgggggac 360
ccatgaggtg cggtacgtct cggccgggca gagcgtggcg tgcggctggt gggccttcgc 420
accgccgtgc ctgcaggtcc tcaacacgcc caagggcatc ctgttcttcc tgtgtgcggc 480
cgcattcctg caggggatga ctgtgaatgg cttcatcaac acagtcatca cctccctgga 540
gcgccgctat gacctgcaca gctaccagag cgggctcatc gccagctcct acgacattgc 600
cgcctgcctc tgcctcacct tcgtcagcta cttcgggggc tcagggcaca agccgcgctg 660
gctgggctgg ggcgtgctgc ttatgggcac ggggtcgctg gtgttcgcgc tgccccactt 720
cacggctggc cgctatgagg tggagttgga cgcgggtgtc aggacgtgcc ctgccaaccc 780
cggcgcggtg tgtgcggaca gcacctcggg cctgtcccgc taccagctgg tcttcatgct 840
```

```
gggccagttc ctgcatggcg tgggtgccac acccctctac acgctgggcg tcacctacct 900
ggatgagaac gtcaagtcca gctgctcgcc cgtctacatt gccatcttct acacagcggc 960
catcctgggc ccagctgccg gctacctgat ggaggtgcc ctgctgaata tctacacgga 1020
aatgggccga cggacggagc tgaccaccga gagcccactg tgggtcggcg cctggtgggt 1080
cggcttcctg ggctctgggg ccgctgcttt cttcaccgcc gttcccatcc ttggttaccc 1140
tcggcagctg ccaggctccc agcgctacgc ggtcatgaga gcggcggaaa tgcaccagtt 1200
gaaggacagc agccgtgggg aggcgagcaa cccggacttt gggaaaacca tcagagacct 1260
gcctctctcc atctggctcc tgctgaagaa ccccacgttc atcctgctct gcctggccgg 1320
ggccaccgag gccactctca tcaccggcat gtccacgttc agccccaagt cttggagtc 1380
ccagttcagc ctgagtgcct cagaagctgc caccttgttt gggtacctgg tggtgccagc 1440
gggtggtggc ggcaccttcc tgggcggctt ctttgtgaac aagctcaggc tccggggctc 1500
cgcggtcatc aagttctgcc tgttctgcac cgttgtcagc ctgctgggca tcctcgtctt 1560
ctcactgcac tgccccagtg tgcccatggc gggcgtcaca gccagctacg cgggagcct 1620
cctgcccgaa ggccacctga acctaacggc tccctgcaac gctgcctgca gctgccagcc 1680
agaacactac agccctgtgt gcggctcgga cggcctcatg tacttctcac tgtgccacgc 1740
agggtgccct gcagccacgg agacgaatgt ggacggccag aaggtgtacc gagactgtag 1800
ctgtatccct cagaatcttt cctctggttt tggccatgcc actgcaggga aatgcacttc 1860
aacttgtcag agaaagcccc tccttctggt tttcatattc gttgtaattt tctttacatt 1920
cctcagcagc attcctgcac taacggcaac tctacgatgt gtccgtgacc ctcagagatc 1980
ctttgccctg ggaatccagt ggattgtagt tagaatacta gggggcatcc cggggcccat 2040
cgccttcggc tgggtgatcg acaaggcctg tctgctgtgg caggaccagt gtggccagca 2100
gggctcctgc ttggtgtacc agaattcggc catgagccgc tacatactca tcatggggct 2160
cctgtacaag gtgctgggcg tcctcttctt tgccatagcc tgcttcttat acaagcccct 2220
gtcggagtct tcagatggcc tggaaacttg tctgcccagc cagtcctcag ccctgacag 2280
tgccacagat agccagctcc agagcagcgt ctgaccaccg cccgcgccca cccggccacg 2340
gcgggcactc agcatttcct gatgacagaa cagtgccgtt gggtgatgca atcacacggg 2400
aacttctatt tgacctgcaa ccttctactt aacctgtggt ttaaagtcgg ctgtgacctc 2460
ctgtccccag agctgtacgg ccctgcagtg ggtgggagga acttgcataa atatatattt 2520
atggacacac agtttgcatc agaacgtgtt tatagaatgt gttttatacc cgatcgtgtg 2580
tggtgtgcgt gaggacaaac tccgcagggg ctgtgaatcc cactgggagg gcggcgggcc 2640
tgcagcccga ggaaggcttg tgtgtcctca gttaaaactg tgcatatcga aatatatttt 2700
gttatttaag cctgcgaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa 2760
aaa                                                              2763

<210> 12
<211> 722
<212> PRT
<213> Homo sapiens

<400> 12
Met Pro Leu His Gln Leu Gly Asp Lys Pro Leu Thr Phe Pro Ser Pro
  1               5                  10                  15
Asn Ser Ala Met Glu Asn Gly Leu Asp His Thr Pro Pro Ser Arg Arg
             20                  25                  30
Ala Ser Pro Gly Thr Pro Leu Ser Pro Gly Ser Leu Arg Ser Ala Ala
          35                  40                  45
His Ser Pro Leu Asp Thr Ser Lys Gln Pro Leu Cys Gln Leu Trp Ala
       50                  55                  60
Glu Lys His Gly Ala Arg Gly Thr His Glu Val Arg Tyr Val Ser Ala
65                  70                  75                  80
Gly Gln Ser Val Ala Cys Gly Trp Trp Ala Phe Ala Pro Pro Cys Leu
             85                  90                  95
Gln Val Leu Asn Thr Pro Lys Gly Ile Leu Phe Phe Leu Cys Ala Ala
            100                 105                 110
Ala Phe Leu Gln Gly Met Thr Val Asn Gly Phe Ile Asn Thr Val Ile
           115                 120                 125
Thr Ser Leu Glu Arg Arg Tyr Asp Leu His Ser Tyr Gln Ser Gly Leu
```

20

```
        130                  135                  140
Ile Ala Ser Ser Tyr Asp Ile Ala Ala Cys Leu Cys Leu Thr Phe Val
145                  150                  155                  160
Ser Tyr Phe Gly Gly Ser Gly His Lys Pro Arg Trp Leu Gly Trp Gly
                165                  170                  175
Val Leu Leu Met Gly Thr Gly Ser Leu Val Phe Ala Leu Pro His Phe
                180                  185                  190
Thr Ala Gly Arg Tyr Glu Val Glu Leu Asp Ala Gly Val Arg Thr Cys
                195                  200                  205
Pro Ala Asn Pro Gly Ala Val Cys Ala Asp Ser Thr Ser Gly Leu Ser
        210                  215                  220
Arg Tyr Gln Leu Val Phe Met Leu Gly Gln Phe Leu His Gly Val Gly
225                  230                  235                  240
Ala Thr Pro Leu Tyr Thr Leu Gly Val Thr Tyr Leu Asp Glu Asn Val
                245                  250                  255
Lys Ser Ser Cys Ser Pro Val Tyr Ile Ala Ile Phe Tyr Thr Ala Ala
                260                  265                  270
Ile Leu Gly Pro Ala Ala Gly Tyr Leu Ile Gly Gly Ala Leu Leu Asn
                275                  280                  285
Ile Tyr Thr Glu Met Gly Arg Arg Thr Glu Leu Thr Thr Glu Ser Pro
        290                  295                  300
Leu Trp Val Gly Ala Trp Trp Val Gly Phe Leu Gly Ser Gly Ala Ala
305                  310                  315                  320
Ala Phe Phe Thr Ala Val Pro Ile Leu Gly Tyr Pro Arg Gln Leu Pro
                325                  330                  335
Gly Ser Gln Arg Tyr Ala Val Met Arg Ala Ala Glu Met His Gln Leu
                340                  345                  350
Lys Asp Ser Ser Arg Gly Glu Ala Ser Asn Pro Asp Phe Gly Lys Thr
                355                  360                  365
Ile Arg Asp Leu Pro Leu Ser Ile Trp Leu Leu Leu Lys Asn Pro Thr
        370                  375                  380
Phe Ile Leu Leu Cys Leu Ala Gly Ala Thr Glu Ala Thr Leu Ile Thr
385                  390                  395                  400
Gly Met Ser Thr Phe Ser Pro Lys Phe Leu Glu Ser Gln Phe Ser Leu
                405                  410                  415
Ser Ala Ser Glu Ala Ala Thr Leu Phe Gly Tyr Leu Val Val Pro Ala
                420                  425                  430
Gly Gly Gly Gly Thr Phe Leu Gly Gly Phe Phe Val Asn Lys Leu Arg
                435                  440                  445
Leu Arg Gly Ser Ala Val Ile Lys Phe Cys Leu Phe Cys Thr Val Val
        450                  455                  460
Ser Leu Leu Gly Ile Leu Val Phe Ser Leu His Cys Pro Ser Val Pro
465                  470                  475                  480
Met Ala Gly Val Thr Ala Ser Tyr Gly Gly Ser Leu Leu Pro Glu Gly
                485                  490                  495
His Leu Asn Leu Thr Ala Pro Cys Asn Ala Ala Cys Ser Cys Gln Pro
                500                  505                  510
Glu His Tyr Ser Pro Val Cys Gly Ser Asp Gly Leu Met Tyr Phe Ser
                515                  520                  525
Leu Cys His Ala Gly Cys Pro Ala Ala Thr Glu Thr Asn Val Asp Gly
        530                  535                  540
Gln Lys Val Tyr Arg Asp Cys Ser Cys Ile Pro Gln Asn Leu Ser Ser
545                  550                  555                  560
Gly Phe Gly His Ala Thr Ala Gly Lys Cys Thr Ser Thr Cys Gln Arg
                565                  570                  575
Lys Pro Leu Leu Leu Val Phe Ile Phe Val Val Ile Phe Phe Thr Phe
                580                  585                  590
```

21

```
Leu Ser Ser Ile Pro Ala Leu Thr Ala·Thr Leu Arg Cys Val Arg Asp
    595                 600                 605
Pro Gln Arg Ser Phe Ala Leu Gly Ile Gln Trp Ile Val Val Arg Ile
    610                 615                 620
Leu Gly Gly Ile Pro Gly Pro Ile Ala Phe Gly Trp Val Ile Asp Lys
625                 630                 635                 640
Ala Cys Leu Leu Trp Gln Asp Gln Cys Gly Gln Gln Gly Ser Cys Leu
                645                 650                 655
Val Tyr Gln Asn Ser Ala Met Ser Arg Tyr Ile Leu Ile Met Gly Leu
                660                 665                 670
Leu Tyr Lys Val Leu Gly Val Leu Phe Phe Ala Ile Ala Cys Phe Leu
                675                 680                 685
Tyr Lys Pro Leu Ser Glu Ser Ser Asp Gly Leu Glu Thr Cys Leu Pro
    690                 695                 700
Ser Gln Ser Ser Ala Pro Asp Ser Ala Thr Asp Ser Gln Leu Gln Ser
705                 710                 715                 720
Ser Val

<210> 13
<211> 20
<212> DNA
<213> Homo sapiens

<400> 13
accctgtcta gcaggttgca                                              20

<210> 14
<211> 19
<212> DNA
<213> Homo sapiens

<400> 14
ctgtcggagt cttcagatg                                               19

<210> 15
<211> 20
<212> DNA
<213> Homo sapiens

<400> 15
tccatcacag cctcctacgc                                              20

<210> 16
<211> 20
<212> DNA
<213> Homo sapiens

<400> 16
tgcctctact ctgaccctag                                              20

<210> 17
<211> 20
<212> DNA
<213> Homo sapiens

<400> 17
ggagcagtca ttgacaccac                                              20
```

```
<210> 18
<211> 21
<212> DNA
<213> Homo sapiens


<400> 18
tgctgggagt acaacgtgac g                                                          21

<210> 19
<211> 20
<212> DNA
<213> Homo sapiens

<400> 19
acaaggagga tggactgcag                                                            20

<210> 20
<211> 20
<212> DNA
<213> Homo sapiens

<400> 20
caggaatccc agctccagtg                                                            20

<210> 21
<211> 20
<212> DNA
<213> Homo sapiens

<400> 21
gctacaaccc aactactggc                                                            20

<210> 22
<211> 20
<212> DNA
<213> Homo sapiens

<400> 22
gggactaact gtgatactgg                                                            20
```